

WHAT IS CLAIMED:

1. A two-port isolator comprising:

a permanent magnet;

a ferrite to which a DC magnetic field is applied by the permanent magnet;

a first center electrode disposed on the surface of the ferrite or inside the ferrite, one end of the first center electrode being electrically connected to a first input-output port and the other end of the first center electrode being electrically connected to a second input-output port;

a second center electrode disposed on the surface of the ferrite or inside the ferrite and intersects with the first center electrode in an electrically insulated state, one end of the second center electrode being electrically connected to the second input-output port and the other end of the first center electrode being electrically grounded;

a first matching capacitor electrically connected between the first input-output port and the second input-output port;

a resistor electrically connected between the first input-output port and the second input-output port; and

a series resonant circuit, including a second matching capacitor and an inductor, electrically connected between the second input-output port and ground.

2. A two-port isolator according to Claim 1, wherein the resonant frequency of the series resonant circuit including the

second matching capacitor and the inductor is between the frequencies of the second and third harmonic waves.

3. A two-port isolator according to Claim 1, wherein capacitor electrodes of the first matching capacitor and the second matching capacitor and an inductor electrode of the inductor are provided on a multilayer substrate including insulating layers.

4. A two-port isolator according to Claim 1, wherein the two-port isolator is a lumped-constant isolator.

5. A two-port isolator according to Claim 1, further comprising a metallic case including a metallic top case and a metallic bottom case having the permanent magnet, and the ferrite, the first and second center electrodes disposed therein.

6. A two-port isolator according to Claim 1, wherein the ferrite is substantially circular and the first and second center electrodes are made of copper foil.

7. A two-port isolator according to Claim 1, further comprising a multilayer substrate including the first and second matching capacitors, the resistor, and the inductor.

8. A two-port isolator according to Claim 1, further

comprising a multilayer substrate having the series resonant circuit disposed therein.

9. A two-port isolator according to Claim 1, wherein the series resonant circuit functions as a trap circuit.

10. A two-port isolator according to Claim 9, wherein the resonant frequency of the trap circuit is between the frequencies of the second and third harmonic waves.

11. A communication device comprising the two-port isolator according to Claim 1.

12. A two-port isolator comprising:

a permanent magnet;

a ferrite to which a DC magnetic field is applied by the permanent magnet;

a first center electrode disposed on the surface of the ferrite or inside the ferrite, one end of the first center electrode being electrically connected to a first input-output port and the other end of the first center electrode being electrically connected to a second input-output port;

a second center electrode disposed on the surface of the ferrite or inside the ferrite and intersects with the first center electrode in an electrically insulated state, one end of the second center electrode being electrically connected to the

second input-output port and the other end of the second center electrode being electrically connected to a third port;

a first matching capacitor electrically connected between the first input-output port and the second input-output port;

a resistor electrically connected between the first input-output port and the second input-output port;

a second matching capacitor electrically connected between the second input-output port and the third port; and

an inductor electrically connected between the third port and the ground.

13. A two-port isolator according to Claim 12, wherein the resonant frequency of a circuit that includes a parallel resonant circuit, including the second center electrode and the second matching capacitor, and the inductor is between the frequencies of the second and third harmonic waves.

14. A two-port isolator according to Claim 12, wherein capacitor electrodes of the first matching capacitor and the second matching capacitor and an inductor electrode of the inductor are provided on a multilayer substrate including insulating layers.

15. A two-port isolator according to Claim 12, wherein the two-port isolator is a lumped-constant isolator.

16. A two-port isolator according to Claim 12, further comprising a metallic case including a metallic top case and a metallic bottom case having the permanent magnet, and the ferrite, the first and second center electrodes disposed therein.

17. A two-port isolator according to Claim 12, further comprising a multilayer substrate including the first and second matching capacitors, the resistor, and the inductor.

18. A two-port isolator according to Claim 13, further comprising a multilayer substrate having the parallel resonant circuit disposed therein.

19. A two-port isolator according to Claim 13, wherein the parallel resonant circuit functions as a trap circuit.

20. A two-port isolator according to Claim 19, wherein the resonant frequency of the trap circuit is between the frequencies of the second and third harmonic waves.

21. A communication device comprising the two-port isolator according to Claim 12.